II. REJECTION OF CLAIMS 1-5, 7-8, 11-12, 15-17, 19-20, 22, 25-29, 31-33, 35 AND 37 UNDER 35 USC 103 AS BEING UNPATENTABLE OVER MARCUSE (USP 5,608,561) IN VIEW OF YONEYAMA (USP 801,860)

The present invention as recited, for example, in claim 1, relates to a transmitter which adjusts at least one of the rise time and fall time of signal light **in accordance with characteristics of the signal light at the receiver**.

Please note that independent claim 16 specifically recites a modulator which modulates light with an electrical modulation signal, and that at least one of the rise time and the fall time of the **electrical modulation signal** is adjusted in accordance with characteristics of the modulated light as received by a receiver through a transmission path. Independent claims 26, 28, 35 and 37 recite somewhat similar recitations. See also dependent claim 3.

Marcuse discloses that pulse rising and falling times of a transmitted pulse can be reduced, to thereby reduce modulator chirp. Thus, Marcuse specifically relates to reducing modulator chirp which is defined by Marcuse as excess spectral broadening imparted by the modulator. See, for example, column 6, lines 25-27, of Marcuse.

On pages 2-3 of the Office Action, the Examiner admits that Marcuse does not specifically teach that changes are made in accordance with characteristics of the signal light at a receiver. However, the Examiner asserts that such operation would be obvious in view of Marcuse, or obvious in view of Marcuse in combination with Yoneyama.

In Marcuse, it appears that the rise time and fall time are fixed after being initially set. No portion of Marcuse discloses or suggests that the rise time and fall time are subsequently adjusted after being initially set. Moreover, as Marcuse relates to reducing modulator chirp, Marcuse does not seem so concerned with the signal light as received by a downstream receiver.

Therefore, it is respectfully submitted that the adjusting of the rise time and/or fall time in accordance with characteristics of the signal light at the receiver would not be obvious in view of Marcuse, by itself.

Yoneyama controls transmitted power levels in accordance with detected power levels at the receiver. More specifically, in Yoneyama, individual wavelengths are multiplexed together into a WDM light, and transmitted through a transmission line. The transmitted WDM light is then demultiplexed into the individual wavelengths, which are received by individual

receivers, respectively. See, for example, FIGS. 6 and 7 of Yoneyama.

However, Yoneyama simply controls the transmitted power levels of the individual wavelengths so that the individual wavelengths have the same power levels at the receivers. Yoneyama is not related to controlling the rise time and/or fall time.

Therefore, Yoneyama is related to a totally different objective than Marcuse. Accordingly, it is respectfully submitted that Yoneyama should be considered non-analogous art to Marcuse for the purpose of the rejection.

Moreover, since Marcuse is directed to controlling rise time and fall time, and Yoneyama is directed to controlling power levels, it is respectfully submitted that the combination of Marcuse and Yoneyama would not teach that changes in rise time and/or fall time are made in accordance with characteristics of the signal light at a receiver.

Therefore, it is respectfully submitted that the adjusting of the rise time and/or fall time in accordance with characteristics of the signal light at the receiver should not be considered to be obvious in view of Marcuse in combination with Yoneyama.

On page 8 of the Office Action, the Examiner asserts that:

> The examiner believes that the teachings of Yoneyama would have been suggested to one skilled in the art that it would have been possible to control the transmitter in accordance with the characteristics of the signal light at the receiver. In general Marcuse teaches that the rise and/or fall times of a transmitter can be manipulated via a high-bandwidth driver or filter at the transmitter, while Yoneyama teaches manipulation of a transmitter in accordance with the characteristics of the signal light at the receiver. One skilled in the art would clearly have recognized that it would have been possible to manipulate the rise and/or fall times of a signal in accordance with the characteristics of the signal light at the receiver via the feedback method taught by Yoneyama whereby the feedback signal controls the high-bandwidth driver or filter of the transmitter in Marcuse.

Therefore, generally, the Examiner applied the "feedback signal" of Yoneyama to the filter of Marcuse. However, as indicated above, Marcuse does not appear to disclose or suggest that the rise time and fall time are subsequently adjusted after being initially set. Moreover, the "feedback signal" of Yoneyama is not related to, and not intended for, adjusting the rise and fall time. Instead, the "feedback signal" is directed to controlling power levels. No portion of Yoneyama suggests that the "feedback signal" can be used for any purpose other than controlling power levels. Therefore, it is respectfully submitted that the combination of Yoneyama and Marcuse would not disclose or suggest the use of the "feedback signal" of

Yoneyama with the filter of Marcuse in the manner proposed by the Examiner.

* * *

As indicated above, independent claim 16 specifically recites a modulator which modulates light with an electrical modulation signal, and that at least one of the rise time and the fall time of the **electrical modulation signal** is adjusted in accordance with characteristics of the modulated light as received by a receiver through a transmission path. Independent claims 26, 28, 35 and 37 recite somewhat similar recitations. See also dependent claim 3. In accordance with the above comments, it is respectfully emphasized that this operation, relating to adjustment of the **electrical modulation signal**, is not disclosed or suggested by the cited combination of references.

* * *

In view of the above, it is respectfully submitted that the rejection is overcome.

III. REJECTION OF CLAIMS 6 AND 18 UNDER 35 USC 103 AS BEING UNPATENTABLE OVER MARCUE IN VIEW OF YONEYAMA AND YAMASHITA (USP 4,723,312) OR DEVENPORT (USP 6,108,119)

The comments in Section II, above, also apply here, where appropriate.

Claims 6 and 18 specifically recite that both the rising and falling times are **lengthened**. See also claims 11, 27 and 29.

Marcuse discloses that pulse rising and falling times of a transmitted pulse can be reduced, to thereby reduce modulator chirp. Thus, Marcuse specifically relates to reducing modulator chirp which is defined by Marcuse as excess spectral broadening imparted by the modulator. See, for example, column 6, lines 25-27, of Marcuse.

However, Marcuse simply discloses that rising and falling times can be **reduced**. Marcuse does NOT disclose that rising and/or falling times can be **lengthened**.

In fact, in the Office Action, the Examiner admits that Marcuse does not specifically teach that a transmitter lengthens both the rise time and the fall time. Instead, the Examiner asserts that such operation would be obvious in view of Marcuse, or obvious in view of Marcuse when combined with either Yamashita or Devenport.

However, Marcuse is specifically directed to reducing modulator chirp. For this purpose,

the rise and fall times must be reduced, as described in Marcuse. If the rise time and/or fall time were lengthened, it is respectfully submitted that such operation would increase modulator chirp. Therefore, lengthening the rise time and/or fall time would be contrary to Marcuse. Accordingly, it is respectfully submitted that lengthening the rise time and/or the fall time should not be considered obvious in view of Marcuse, by itself.

In item 5, on page 7 of the Office Action, the Examiner asserts that the RC filter circuit in FIG. 2 of Marcuse could be used to lengthen the rise time and/or fall time. More specifically, the Examiner asserts that one skilled in the art would clearly have recognized that the components of the RC circuit could have been selected for lengthening, instead of decreasing, the rise and fall times of the signals. However, in response, the Applicant asserts that, as indicated above, the lengthening of the rise time and/or fall time would be contrary to the invention of Marcuse. More specifically, if the values of the resistor and capacitor in the RC filter circuit in FIG. 2 of Marcuse were chosen to lengthen the rise time and/or fall time, such a filter would increase modulator chirp. Since Marcuse is directed to decreasing (NOT increasing) modulator chirp, the modification of the RC filter circuit in FIG. 2 as proposed by the Examiner would be contrary to the intended purpose of Marcuse, and would effectively destroy the invention of Marcuse. In this sense, Marcuse can be seen as "teaching away" from the modification of the RC filter circuit in FIG. 2 as proposed by the Examiner.

Yamashita discloses that the fall time of a long-wavelength LED is generally two to three times longer than the rise time. See, for example, column 1, lines 18-27, of Yamashita. Yamashita reduces the fall time so that it is not so much longer than the rise time. Therefore, Yamashita is related to a totally different objective (reducing the difference in fall time versus rise time) than Marcuse (reducing modulator chirp). Accordingly, it is respectfully submitted that Yamashita is non-analogous to Marcuse, and should not be combined with Marcuse for the purpose of the rejection.

Moreover, Yamashita is related to reducing the fall time. Yamashita does not include any disclosure relating to "lengthening" the fall time.

Therefore, it is respectfully submitted that lengthening the rise time and/or the fall time would not be obvious in view of Marcuse in combination with Yamashita.

In item 5 on page 7 of the Office Action, the Examiner asserts that column 1, lines 45-46, and FIG. 4, of Yamashita, teach that smaller values of the resistors can be used to shorten the fall time, while larger values of the capacitor can be used to lengthen the rise and the fall

times. Therefore, the Examiner appears to assert that the RC circuit in FIG. 2 of Marcuse could be modified by the teachings of Yamashita to lengthen the rise time and/or fall time in Marcuse.

The Applicant agrees that Yamashita discloses that values of circuit components can be changed to change the fall time of LED 2 in Yamashita. However, it is respectfully submitted that this disclosure in Yamashita indicates that the desired effect is to **reduce** the fall time so that it is not so much longer than the rise time. See, for example, column 1, lines 58-61, of Yamashita. Therefore, the object of Yamashita is to reduce the fall time. Accordingly, Yamashita "teaches away" from increasing the fall time, as proposed by the Examiner. Accordingly, it is respectfully submitted that the Examiner's proposed use of Yamashita is contrary to the intended purpose of Yamashita.

Moreover, the portion of Yamashita cited by the Examiner is not related to the objective in Marcuse of reducing modulator chirp. Therefore, the RC circuit of Yamashita is not intended for, and is not directed to, reducing modulator chirp. Therefore, it is respectfully submitted that Yamashita should not be combined with Marcuse in the manner proposed by the Examiner.

Devenport is related to reducing the rise time and fall time of a voltage used to drive an analog programmable power supply used to provide a bias voltage for an optical modulator. See, for example, FIG. 3, and the disclosure in column 5, lines 60-64, of Devenport. Therefore, Devenport is directed to the rise time and fall time for driving a power supply. Devenport is NOT directed to the rise time and fall time of signal light transmitted by an optical modulator, or to the rise time and fall time of an electrical modulation signal. Accordingly, it is respectfully submitted that Devenport is non-analogous art to Marcuse, and should not be combined with Marcuse for the purpose of this rejection.

Therefore, it is respectfully submitted that lengthening the rise time and the fall time would not be obvious in view of Marcuse in combination with Devenport.

On page 8 of the Office Action, the Examiner asserts that column 5, lines 60-63, of Devenport, teach a method of increasing the rise and the fall times of a signal via the incorporation of a large capacitance in the transmitter. However, as indicated above, Devenport relates to the rise and fall times **for driving a power supply**. This is non-analogous art to the rise and fall times of a signal light (as recited, for example, in claim 1) or an electrical modulation signal (as recited, for example, in claims 3, 16, 26, 28, 35 and 37).

Therefore, it is respectfully submitted that Marcuse and Devenport should not be combined in the manner proposed by the Examiner. Moreover, if Marcuse and Devenport were combined, the combination might arguably suggest some type of adjustment to a signal for driving a power supply to drive a modulator, but would NOT disclose or suggest the lengthening of the rise and fall times of the transmitted signal light or an electrical modulation signal.

In view of the above, it is respectfully submitted that the rejection is overcome.

IV. REJECTION OF CLAIMS 13, 14, 23 AND 24 UNDER 35 USC 103 AS BEING UNPATENTABLE OVER MARCUSE IN VIEW OF YONEYAMA AND CHRAPLYVY (USP 5,420,868)

The comments in Sections II and III, above, also apply here, where appropriate.

V. CONCLUSION

In view of the above, it is respectfully submitted that the application is in condition for allowance, and a Notice of Allowance is earnestly solicited.

If any further fees are required in connection with the filing of this response, please charge such fees to our Deposit Account No. 19-3935.

Respectfully submitted,

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Date: October 1, 2002

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